

Sandia's Videoconferencing Services And Collaborative Environments Organization

The Videoconferencing Services And Collaborative Environments organization provides distributed meeting support for Sandia customers. We utilize fields of expertise that include videoconferencing, audioconferencing, multimedia presentation and other technologies required to support collaborative meetings. Our efforts span a range of applications and systems in collaborative settings, from auditoriums to desktops. Our goal is to deploy this technology in such a way that it is virtually transparent to the user. We have been identified as a Sandia Mission Essential service. The program is an important part of providing a reliable, responsive, modern, and secure information environment that allows Sandia to operate its business effectively and efficiently.

We provide reliable, collaborative meeting support Monday through Friday, 7:00 a.m. to 5:00 p.m., in both Pacific and Mountain Time zones. Support services include call set-up, urgent response, and event planning. We supply assistance via a help desk (845-CCHD #6) and event support dispatcher/scheduler (845-2000). Additionally, we offer consultation and support services to line organizations that choose to purchase private systems. Current policy dictates that all private room support be charged to the line organization. We are presently growing a private room maintenance subscription service; current Sandia customers are Executive Management, Advanced Concept Group, ASCI & the Computer Science Research Institute.

Our department works daily with NM CSUs (Org. 9623) to perform videoconference call set-up support (establish connectivity & correct problems). We supports on average over 200 calls per month between NM & CA (i.e., 400 total call setups). Additionally, of the over 3700 calls supported in FY01 roughly one-third were to locations external to Sandia. Eighty percent of the external calls are involving NM facilities.

Our team is responsible for corporate-wide development and management of dynamic computer and communication technologies in our videoconference rooms. There are currently 25 core videoconference rooms, funded by corporate in-direct, that require continuous enhancements to adequately support robust collaboration. Additionally, there are roughly 100 private rooms that require constant stewardship to maintain compatibility with the core rooms. We provide our core support services at the following locations:

Auditoriums: NM825, NM962, CA904

Secure Rooms: NM836/110A, CA912/180M, CA912/161

Unclassified Rooms:

NM701/2001, NM806/201, NM825/CR, NM880/B8, NM880/X10,
NM891/3098, NM892/216, NM897/4056

CA905/210, CA911/103, CA912/112, CA912/121, CA912/156, CA912/180D,
CA912/180R, CA916/101, CA921/108, CA940/1103, CA940/1182

Challenges to Address:

To improve this very dynamic resource we must be forward-looking with a common sense eye towards what is useful to our customers. There are four areas that we have identified for investment and focused effort during FY02 to insure our success (i.e., Infrastructure Improvements, Remote Management, Audio Enhancements and Collaboration Enhancements). Each of these areas is detailed below as to their importance and complexity.

(Priority 1) Reliable Infrastructure:

Sandia's videoconferencing resources currently communicate over the corporate telecommunications infrastructure. While ISDN telephone service will run on cable that does not meet digital signal specifications, reliable videoconference service is achieved when it is deployed on cable that meets CAT5 specifications or above. CAT5 cable delivers acceptable attenuation, propagation delay, and frequency response to reliably support digital signaling.

Sandia's current telecommunications infrastructure was not designed to support video applications. Recent infrastructure surveys reveal significant inconsistencies in video call generation and completion over Sandia's ISDN resources. Presently, there are three options for service improvement:

- 1) Renovate existing ISDN infrastructure wiring, and ensure all new installations are at CAT5 standards.
- 2) Implement a data network, IP based transport capability.
- 3) Implement an ISDN PRI capability for each location. This is currently the favored solution based on cost and long-term capability.

A hybrid, utilizing the three options listed above will be an interim solution. A detailed analysis is being conducted to determine the best approach with a March 31, 2002 Milestone.

(Priority 2) Remote Management and Centralized Support:

The videoconferencing industry's remote management systems are currently entering a second generation. The immature nature of industry tools requires significant time and effort to identify and implement effective solutions in our heterogeneous environment. Remote management tools will enable setup/management of remote conferences, facilitate preventative maintenance, and provide straightforward remote management/diagnostic of systems.

Eight new videoconference units will be purchased and installed to complete the upgrade of all core systems to enable IP remote management. Operation procedures will be established when core videoconference systems have IP remote management capability. Hardware improvements to infrastructure will be needed to take full advantage of centralized operations (i.e., implement a Videoconference Rooms Remote Management Control Box).

(Priority 3) Enhance Conference Room Audio to Facilitated Fluid Interaction:

Sandia's videoconferencing capability has problems delivering clear audio from large conference rooms. There are several variables that must be properly configured to achieve optimum performance with the complex audio capture systems we utilize. The current approach is entirely too complicated and prone to random failure. Because Sandia's videoconferencing systems must be manageable by the customers a balance of function, reliability, and simplicity is mandatory.

Frequent customer complaints reveal that the configuration of audio systems is not adequate in the large NM videoconference rooms. Efforts to resolve the problems have been only partially successful. It will be necessary to hire an expert consultant to evaluate the problem and recommend a solution. Additionally, resolving the problem will require some funding for labor and/or equipment. The core videoconference rooms that need correction are: 701/2001, 880/B8, 880/X10, 892/216 & 897/4056.

(Priority 4) Enable On-Demand Conference Room Collaboration:

A weakness of modern videoconferencing systems is their ability to share high-resolution presentation material. Sandia must implement a strategic, integrated environment, enabling the latest technology to deliver collaboration tools securely that can be deployed enterprise-wide (i.e., application sharing, streaming, etc.).

A platform independent standard to provide high-resolution document and application sharing using videoconferencing equipment is not available. Our solution is to install computers and large high-resolution displays in as many as affordable core videoconference rooms. These systems will provide on-demand collaboration for document sharing. Additionally, we will provide support for a streaming archive server environment that will be available to broadcast live events in core videoconference rooms via the large displays.

Additional Focus Areas:

- Operations & Maintenance of Videoconferencing & Collaboration Resources.
 - Cultivate enhancement opportunities in the management of Sandia's resources to meet customer demand for reliable and intuitive collaboration assets
 - Auditorium Management (Manage CA auditorium)
 - Manage & choreograph live production events to support customer needs.
 - Design & Develop advanced A/V system to support multimedia events.
 - Develop enterprise-wide standards in support of live event distribution (i.e., through ISDN videoconferencing, IP streaming, Closed Circuit TV. etc).

- **Integration & Special Projects**
 - Develop and deploy multimedia collaboration systems to support the customer needs with a wide range of robust tools to enhance their electronic interactions.
 - Standardization of Conference Room Controller Systems
 - Ensure that all collaborative environments utilize a common interface so that customer learning is streamlined and users can operate equipment quickly and painlessly.
 - Develop a workflow process that supports efficient construction and integration of conference rooms.
- **Collaboration Tools**
 - Analyze advancements in videoconferencing technology in order to meet customer demand for continuous improvements in reliability and intuitive functionality in collaborative environments.
 - Design & deploy technology to support high quality multimedia presentations.
 - Develop secure solutions to facilitate collaboration through Sandia and its partner's network security systems and procedures.
 - Review & recommend collaborative tools (i.e. software & hardware) to support customer needs.
 - Video/Audio Broadcast Distribution over IP Networks (Streaming).
 - Delivery of on-demand educational material to the desktop.
 - Delivery of live events (i.e. VIP presentations, corporate communications, DOE broadcasts, etc.) to every desktop.
 - Voice over IP
 - Initiate solutions that will complement real time collaborative tools with IP network audioconference support.
 - IP Network Quality of Service
 - Implement solutions that ensure real-time communications utilize Quality of Service priority hierarchy over IP packet networks.
- **Secure Collaboration (Leading an NNSA-Wide Initiative; ADAPT Funded)**
 - Develop and deploy a state-of-the-art, secure videoconferencing solution.
 - Develop and deploy secure computer collaboration tools to augment videoconferencing capabilities.

- **Future Work Environments (ASCI Funded)**
 - Tele-Immersion is an ASCI University partner's collaboration to develop a near 3-D quality capability. The goal is to eliminate the need for the user to wear special equipment to perceive the 3-D effect.
 - Access Grid Nodes are complex advanced videoconferencing facilities that require trained technicians to operate.
 - Design future collaboration environments (conference rooms & offices) and coordinate their implementation in new Sandia buildings (i.e., DISL, JCEL, Mesa, etc)
- **Nuclear Weapons Integration Environment (ASCI Funded)**
 - Support the development of an engineer's common operation environment to reduce project cycle time for collaborative design efforts.
- **Weapons Mass Destruction – Decision Analysis Centers (CA-site funded)**
 - Support the design and deployment of intense collaborative environments to facilitate Decision Analysis training and exercises.